

WHAT IS CLAIMED IS:

1. A superconducting wire rod filled with or interiorly including a superconductor containing a boron, wherein a metal powder is added to a superconducting material included in said superconducting wire rod, said metal powder is selected from at least one of an indium, a tin, a lead, an iron, a magnesium and an aluminum, said metal power having an average grain diameter equal to or less than 20 μm is 5 to 25 vol% dispersed in said superconducting material, a density of the superconducting material included in the superconducting wire rod after a final work is equal to or more than 90% a theoretical density, and a critical current density is equal to or more than 1000 A/cm².
2. A superconducting wire rod as claimed in claim 1, wherein a defect portion having an area equal to or more than 10 mm² does not exist over an entire length of the wire rod, on a surface of said superconducting wire rod.
3. A superconducting wire rod as claimed in claim 1, wherein in the case that a bending strain rate capable of maintaining a critical current density $J_c(1)$ 90% equal to or more than a critical current density $J_c(0)$ at a time when no bending is applied to the wire rod is defined as an allowable bending strain rate, the allowable bending strain rate ϵ (%) ($\epsilon = (t/2r) \times 100$) is equal to or more than 0.8%, on the assumption that an entire thickness of said superconducting wire rod is

set to t , a radius of bending is set to r , and a rate of bending strain is set to ϵ .

4. A superconducting wire rod as claimed in claim 1, wherein said superconductor containing the boron is made complex compound with a different kind of superconductor.

5. A superconducting wire rod as claimed in claim 4, wherein said different kind of superconductor is a niobium titanium.

6. A superconducting wire rod as claimed in claim 1, wherein the connection between the superconducting wire rods mentioned above is achieved by using a connecting method corresponding to a bonding via the superconductor containing the boron.

7. A method of producing a superconducting wire rod comprising:

a step of mixing a metal powder having an average grain diameter equal to or less than $20 \mu\text{m}$ and selected from at least one of an indium, a tin, a lead, an iron, a magnesium and an aluminum of 5 to 25 vol% to a superconducting powder containing a boron so as to produce a mixed powder;

a step of charging said mixed powder to a metal pipe; and

a step of wiring and/or rolling said metal pipe,

wherein a density of a superconducting material contained in the superconducting wire rod

after a final process is equal to or more than 90%, and a critical current density is equal to or more than 1000 A/cm².